



**Northeast Pennsylvania
Regional Bridge Building Competition**

Federal Tax # EIN 23-2985002

A Federal Tax Exempt Charitable Organization
[section 509(a)(1), 509(a)(2), and 501(a) of 501(c)(3)]

Incorporated 2/5/99

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Carbon Lehigh Intermediate Unit #21
4210 Independence Dr.
Schnecksville, PA 18078-2580

November 5, 2015

Dear Dr. Eib

The Northeastern Pennsylvania Regional Bridge Building Committee was established to encourage secondary (grades 9-12) students to explore and consider careers in science, mathematics, engineering and technology (We do accept some 7th & 8th graders as exhibition only). The 2015 (27th annual) competition will be held Saturday February 13, 2016 in the Viewmont Mall (Exit 191A off Interstate 81) in Dickson City. We have set a snow date on February 20th in case of severe inclement weather. We urge you encourage students from All Public & Private Secondary Schools (including Vocational Schools) in Carbon County to build bridges to enter in this year's competition.

There are no registration fee or other charges to participate (expenses are covered by our sponsors) to a school or student participant. The only expenses incurred would be to obtain the adhesive that they chose to use and travel expenses to and from The Viewmont Mall on the day of the competition.

Each school is permitted to enter a maximum of three bridges (each bridge is to be designed and built by an **INDIVIDUAL STUDENT**) to represent that school. The students representing each school may be selected either by conducting a school in-house local competition or by any manner each school decides upon. Wood kits (consisting of 25, 24 inch long 3/32 inch square basswood; a sufficient quantity for one bridge will be supplied by the regional directors for each of your three (3) registered competitors. Arrangements may be made to obtain these kits from Mr. Kieffer.

Each student participant and sponsoring teacher will receive a commemorative t-shirt, program book, and a certificate of participation.

The competition will start with registration and checking participant's bridges starting at 8:45 AM on the day of the competition. The actual competition will commence after the last bridge has been registered. All bridges entered in the regional competition must meet the construction criteria as specified by the International Bridge Building Committee (2016 criteria is enclosed) and will be checked for strict adherence by a panel of independent judges prior to the start of testing. Trophies/plaques will be awarded to the top three bridges, based upon efficiency.

The first and second place winners (as determined by the efficiency of the bridge as defined by the rules) from our competition, will be eligible to rebuild their bridge for entrance into the International Bridge Building Competition to be held on a Saturday in May (date to be announced later) in Chicago, IL.

The competition has proven to be an interesting and exciting event, and we hope that this event will continue to encourage students to take a serious look at engineering/science/mathematics as a career. Please visit our website, www.neparbdgblg.com for more details and specifics on the competition.

For rule clarification and interpretation please contact (Don Kieffer) at: Voice: (570) 586-0197; email: dhkieffer@gmail.com; or postal: 134 Beverly Drive Clarks Summit, PA 18411-1302. Don is willing to communicate with teachers and/or students to explain how the competition operates as well as explain the defined criteria.

Please notify me (Mr. Donald Kieffer) by January 11, 2016 (using the registration form on the reverse side) relative to your intent to participate in this year's competition (including the name, age, grade, shirt size of the participants).

Sincerely,

Mr. Donald H. Kieffer & Paul J. Schneider, Co-Directors

The maximum mass of the bridge this year is 25 grams and the maximum load mass for calculating efficiency is 50,000 grams. Remember that the mass of the bridge is in the denominator of the efficiency equation. Therefore, the key will be to have a design that allows for the lowest mass possible, but maintains the strength. Symmetry will play a major factor again in your design this year.

The following information is Needed For Each Student to Register Competitors in the Regional Competition. It must be sent via email [DHKIEFFER@ALUM.LHUP.EDU], or regular postal service to the address in our letterhead prior to January 11, 2016.

Student #1

Name: _____ Grade: _____

Home Address _____
(street) _____ (Apartment #) _____
PA. _____
(City) (State) (Zip Code)

Home Phone () _____

Sponsor: _____

School: _____

Address: _____
(Street) _____
PA. _____
(City) (Zip)

School Phone: () _____

T-shirt Size: _____ Parent's Name: _____

Student #2

Name: _____ Grade: _____

Home Address _____
(street) _____ (Apartment #) _____
PA. _____
(City) (State) (Zip Code)

Home Phone () _____

Sponsor: _____

School: _____

Address: _____
(Street) _____
PA. _____
(City) (Zip)

School Phone: () _____

T-shirt Size: _____ Parent's Name: _____

Student #3

Name: _____ Grade: _____

Home Address _____
(street) _____ (Apartment #) _____
PA. _____
(City) (State) (Zip Code)

Home Phone () _____

Sponsor: _____

School: _____

Address: _____
(Street) _____
PA. _____
(City) (Zip)

School Phone: () _____

T-shirt Size: _____ Parent's Name: _____



2016 International & NEPA Regional Bridge Building Competition Criteria

These rules have been developed by the International Bridge Building Committee for the **Thirty Eighth International Bridge Building Contest** to be held on Saturday, May ?? in Chicago, Illinois, USA. These rules have also been adopted by the Northeast Pennsylvania Regional Bridge Building Competition to be held Saturday February 13, 2016 (Snow Date February 20, 2016) at the Viewmont Mall in Dickson City, PA.

In order to receive official wood and participate in the contest, contact Donald H. Kieffer by e-mail at dhkieffer@gmail.com. Each school is limited to three bridges from 3 different competitors (**NO TEAMS ARE PERMITTED**). Students may participate in person, by proxy, or by mail entry.

Please visit our website (neparbdgblg.com) for specific suggestions and information relative to our competition. If you have any questions, please feel free to contact: Donald H. Kieffer (570-561-3286, email dhkieffer@gmail.com, or 134 Beverly Dr., Clarks Summit, PA 18411) or Paul J. Schneider (paul.j.schneider@gmail.com).

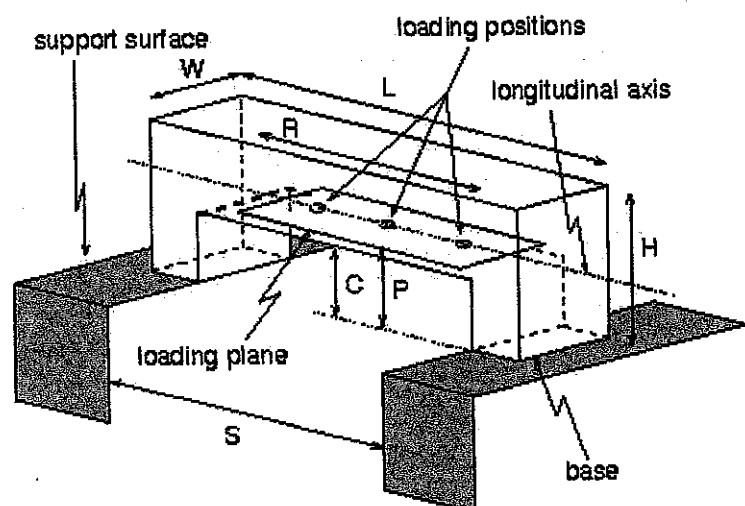
The object of this contest is to see who can design, construct and test the **most efficient** bridge within the specifications. Model bridges are intended to be simplified versions of real-world bridges, which are designed to accept a load in any position and permit the load to travel across the entire bridge. In order to simplify the model bridge design process, the number of loading positions is reduced to three, and to allow the contest to proceed in a reasonable amount of time, only one loading position is actually tested. These simplifications do not negate the requirement that the bridge must be designed to accept a load at any of the three positions. Bridges determined by the judges not to meet this requirement will be disqualified and tested as unofficial bridges.

1. Materials

- The bridge must be constructed only from the **official 3/32-inch square cross-section basswood included in the kit** and any commonly available adhesive.
- The official basswood may be notched, cut, sanded or laminated in any manner but must still be identifiable as the original official basswood.
- No other materials may be used. The bridge may not be stained, painted or coated in any fashion with any foreign substance.

2. Construction

- The bridge mass shall be no greater than 25.00 grams.
- The bridge (see Figure 1) must span a gap (**S**) of 300.0 mm, be no longer (**L**)



than 400.0 mm, be no taller (**H**) than 180.0 mm above the support surfaces, and have a maximum width (**W**) of 70.0 mm. It must have a horizontal loading plane that is a height (**P**) above the support surfaces where $60.0 \text{ mm} \leq P \leq 80.0 \text{ mm}$. The bridge structure may not project below the support surfaces.

- c. The bridge must be constructed to provide a horizontal support surface for the loading plate and rod at each of the three possible loading positions. These three positions, at the mid-span of the bridge and 60.0 mm to either side of the center, will be clearly and consecutively labeled "1, 2, 3" from either end of the bridge by the participant before submission to the judges (see 3b). The structure of the horizontal loading plane must be a minimum length (**R**) of 160.0 mm and centered on the mid-span of the bridge. The bridge structure must allow the loading rod (see 3a) to be mounted from below.
- d. The bridge must have a minimum clearance (**C**) of 60.0 mm in height above the support surfaces. This clearance also extends 80.0 mm toward either end of the bridge from the center point of the bridge. It must be at least as long as the horizontal loading plane, and lie directly beneath it. No part of the bridge structure may be in this clearance area, and a 60.0 mm high, by 160.0 mm long block oriented with its 160.0 mm dimension parallel to the span of the bridge must pass cleanly under the bridge when the bridge is placed on a flat table top.

3. Loading

- a. The load will be applied by means of a 40.0 mm square plate that is 6.35 mm (1/4 inch) in thickness. A 9.53 mm (3/8 inch) diameter loading rod is attached from below to the center of the plate (see Figure 2). The plate will be horizontal, it will not pivot on the loading rod, and the sides of the plate will be parallel to the longitudinal axis of the bridge.
- b. The three loading positions will be located on the horizontal loading plane. The center loading position (numbered "2") will be located at the center point of the bridge. The other two loading positions (numbered "1" and "3") will be located 60.0 mm toward either end of the bridge from the center.
- c. On the day of the competition, the judges will randomly draw the number of the loading position to be used; it will be the same for all bridges tested.

4. Testing

- a. On the day of the contest, participants will center their bridge on the loading surfaces. They will have previously located the loading plate and 3/8 inch eye bolt to the selected loading position. The load will be applied by the participant. The maximum scoring load supported by any bridge will be 50.0 kg. Any amount over this quantity will not count in the calculation of the bridge's efficiency.

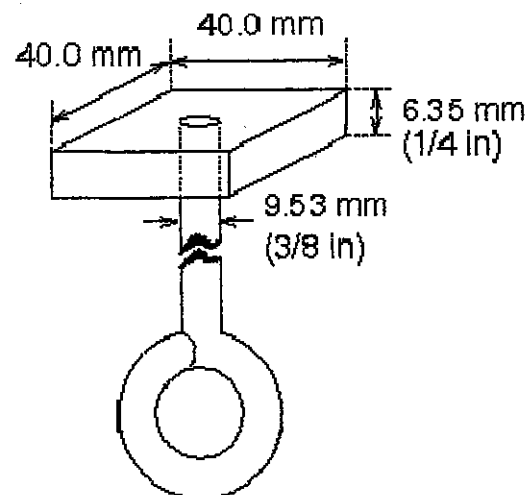


Figure 2. Loading Plate Detail

- b. Bridge failure is defined as the inability of the bridge to carry additional load, or a load deflection of 25.0 mm, whichever occurs first.
- c. The bridge with the highest structural efficiency, E , will be declared the winner.

$$E = \text{Load supported in grams (50,000g maximum)} / \text{Mass of bridge in grams}$$

5. Qualification

- a. All construction and material requirements will be checked prior to testing by the judges. Bridges that fail to meet these specifications at the conclusion of the allowable time for checking will be disqualified. Bridges disqualified prior to the start of the contest may be tested as unofficial bridges at the discretion of the builder and the contest directors.
- b. If, during testing, a condition becomes apparent (i.e., use of ineligible materials, inability to support the loading plate, bridge optimized for a single loading point, etc.) which is a violation of the rules or prevents testing as described above in Section 4, that bridge shall be disqualified. If the disqualified bridge can accommodate loading, it may still be tested as an unofficial bridge as stated above.

Decisions of the judges are final. The above rules will not change for the Northeast Pennsylvania Regional Bridge Building Competition even if the International Rules are changes after our printing of this criteria.

[[Bridge Contest Home](#)] [[International Contest](#)] [[Chicago Regional Contest](#)]
[[Region Locator](#)] [[Official Documentation](#)] [[Other Bridge Links](#)]

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